

when Mr. A. D. Hall, director of the Rothamsted Agricultural Experiment Station, will give an address. The chief object of the conference is the development of the work of the museum with the schools.

ABOUT six hundred teachers and school managers from all parts of the East Riding met at Beverley on Saturday last, at a conference on nature-study. Lord Herries, chairman of the Technical Education Committee of the East Riding County Council, presided, and an address was given by Prof. Miall, who advised his hearers not to use stuffed animals and dried plants in the class-room, but wherever possible to study living animals and plants. A representative committee was elected to promote nature-study in the East Riding and Hull.

WE learn from the *British Medical Journal* that the Board of Trustees of the Johns Hopkins University, Baltimore, has accepted an offer made by Dr. and Mrs. Christian Herter, of New York, to give 5000*l.* to found a memorial lectureship in the medical department of the University, "designed to promote a more intimate knowledge of the researches of foreign investigators in the realm of medical science." This end is to be secured by inviting each year some eminent worker in physiology or pathology to deliver one or more lectures at the Johns Hopkins University upon a subject with which his name is associated. The lecturer will receive as an honorarium the annual income of the endowment. The selection of the lecturer will be made by a committee consisting of Dr. Welch, Dr. Osler and Dr. Abel.

THE Gordon Memorial College at Khartoum, which Lord Kitchener opened recently, is now ready for the chemical and bacteriological research laboratories presented by Mr. Henry S. Wellcome during his recent visit to the Soudan. The fixtures and appliances, made in England, have already been shipped. The equipment for scientific work is most complete in every detail, and will be equal to that in any similar laboratories in Europe. The Sirdar has appointed as director of these research laboratories Dr. Andrew Balfour, of Edinburgh, who has done good work in bacteriology. The Soudan presents exceptional opportunities for the study of tropical diseases, especially malaria, typhoid and dysentery, and it is anticipated that the results of the investigations of Dr. Balfour and his staff will be of the greatest importance. Apart from the original researches and general sanitary work, Dr. Balfour and his staff will devote their attention to the study of the cereals, textile fibres and various matters affecting the development of the agricultural and mineral resources of the country. Dr. Balfour leaves England on December 11, and will be entertained at dinner at the Princes' Restaurant, Piccadilly, on December 8.

A POST-GRADUATE course for the training of teachers in secondary schools will be commenced in January at the London Day Training College, Clare Market, W.C. Candidates for the one year's course of professional training must be graduates, or must have undergone a course of university study and passed an examination equivalent to that for a university degree in arts or in science. All students will receive instruction in the theory, history and art of education, so as to prepare them for the examination for the teacher's diploma of the University of London, and will also go through a course of practical work in approved secondary schools. All the principles studied in the lecture room will be exemplified in the schools, and visits of observation will be made to schools of marked excellence or of special educational interest. Candidates should make application for admission to the course for graduates not later than December 8. Applications should be addressed to the Secretary of the Technical Education Board of the London County Council, 116 St. Martin's Lane, W.C.

THE report of the Indian Universities Commission, to which attention was directed in these columns on September 4, has given rise to many expressions of dissatisfaction in the native Press of India. A resolution explaining the attitude of the Governor-General in Council towards the report was recently circulated among local governments and administrations with a view to evoke full discussion, so that, before coming to a final conclusion, the Government of India may know exactly what is thought by all persons concerned in Indian education. The resolution makes it quite clear that neither the Government nor the Commission desires to initiate a policy tending to make education the monopoly of the rich. At the same time, it is pointed out that a certain minimum standard of efficiency is necessary, and

this is only possible if the expenditure reaches a certain amount which entails fees that some would-be students may find it difficult to pay. The Government, however, contemplates the provision of scholarships for the more able boys and an endowment to cheapen education for poor students. The *Pioneer Mail* is of opinion that the resolution may indefinitely postpone the thorough reform of Indian university education.

ON Monday afternoon, Lord Dudley, in laying the foundation-stone of a new technical institute at Belfast, remarked that if we are to hold our own in the great war of the world, we must see that the soldiers of industry are equipped with the best training that can possibly be given. Replying to the toast of his health at a dinner on Monday evening, Lord Dudley is reported by the *Times* correspondent to have said that the scheme of technical instruction in Belfast was, he understood, incomplete in respect to the fact that it did not include opportunities of learning all that modern science had to tell about the different subjects included in its course. How this defect could be remedied was a subject for careful consideration on their part. The most obvious course would be to make their scheme culminate in the Queen's College and to link that college to their institute. The great obstacle was one of expense; but he could promise them, if they put forward a scheme of that nature, and it was sufficiently supported by local efforts, that the Irish Government would consider it carefully on its merits and bring before the Treasury its claims for assistance from the public funds.

SCIENTIFIC SERIALS.

Journal of Botany, November.—The article by Mr. H. N. Dixon on new varieties of British mosses will interest bryologists. In addition, Mr. E. S. Salmon contributes some bryological notes. The monotypic genus *Osculatia* instituted by De Notaris is referred to *Bryum*, and three species of *Schwetschkea*, C. Müller, are confirmed, while a fourth is assigned to *Leskea*.—Mr. Spencer Moore describes South African plants, collected mostly by Mr. T. Ommamney and Capt. Barrett-Hamilton, of which several species are new.—The catalogue of British Algae compiled by Mr. A. E. Batters continues the *Rhodophyceae* which began in the last number. —There is presented a brief sketch and portrait of Mr. T. Comber, who made a special study of the *Diatomaceae*.

American Journal of Science, November.—Observations on the eruptions of 1902 of La Soufrière, St. Vincent, and Mont Pelée, Martinique, by E. T. Hovey. The first ascent of La Soufrière after the eruption was made on May 7, when the crater was found to be practically unchanged in diameter. The "new" crater of 1812 appears to have taken no part in the eruptions, and although there are many ancient lava beds in the island, no stream of melted lava has issued from the Soufrière during the present eruption. The paper is accompanied by two maps, showing the devastated areas on the two islands, and sixteen photographs.—On the reflection of electric waves at the free end of a parallel wire system, by H. A. Bumstead.—The Upper Permian in Western Texas, by G. H. Girty.—The reduction of vanadic acid by the action of hydrochloric acid, by F. A. Gooch and L. B. Stookey. The reduction of vanadium pentoxide to the trioxide by the action of hot concentrated hydrochloric acid has been suggested as the basis of a quantitative method for the estimation of vanadic acid, but the results of previous work have been contradictory. It is shown by the author that, by the adoption of suitable precautions, the reaction can be made nearly complete, but the method is not a suitable one for the determination of vanadic acid, except when this substance is present in very small amount.

SOCIETIES AND ACADEMIES.

LONDON.

Physical Society, November 14.—Prof. S. P. Thompson, president, in the chair.—A paper on the theory of the aluminium anode, by W. W. Taylor and J. K. H. Inglis, was read by Mr. Inglis. Aluminium is very slowly acted upon by dilute sulphuric acid even at moderately high temperatures. With dilute hydrochloric acid, the action is violent, and it is found that a little hydrochloric acid or soluble chloride be added to dilute sulphuric acid, the action is as violent as with hydrochloric acid

of the same concentration. The object of the present paper is to find an explanation of this anomalous behaviour of sulphuric acid, and of the effect produced by the addition of chloride. It has long been known that, when an aluminium electrode is employed as anode in a solution of a sulphate or sulphuric acid, there is a very great resistance offered to the current, and that this resistance is due to a film which separates the electrode from the solution. If the aluminium is the kathode, or if other acids are substituted for sulphuric acid, this great resistance does not exist. It seems probable that the two phenomena are related, and that the film is also the cause of the slow action of sulphuric acid on aluminium. The authors have attempted to establish a theory which will explain these phenomena. The influence of certain salts of potassium in various concentrations was investigated, and the authors conclude that the presence of certain ions enables a large current to pass through the cell. The reason seems to be that the film of aluminium hydroxide with which the anode is covered is permeable to certain ions but impermeable to others. The anomalous behaviour in sulphuric acid would then be due to the impermeability of the film to the SO_4^{--} ions and also to the Al^{+++} ions. Further experiments gave support to the view that the abnormal behaviour of aluminium anodes in sulphuric acid is due to impermeability.—A paper on a determination of the ratio of the specific heats at constant pressure and at constant volume for air and steam was read by Mr. Mackower. The method employed in this paper is similar to that used by Lummer and Pringsheim, and consists in allowing the gas under investigation to expand adiabatically and measuring the lowering of temperature caused by such expansion. The author's value for the ratio of the two specific heats in the case of air is 1.401. The observations with steam were similar to those in the preceding experiments, but special precautions were necessary to prevent the condensation of the steam in the tubes leading to the vessel. The results for steam were not sufficiently accurate to justify the application of corrections for radiation and for conduction and convection. The values of γ deduced from two series of experiments were 1.307 and 1.304.

Royal Astronomical Society, November 14.—Dr. J. W. L. Glaisher, F.R.S., president, in the chair.—Dr. Isaac Roberts read a paper on Sir W. Herschel's nebulous regions, compared with photographs of the same regions taken simultaneously with the 20in. reflector and 5in. Cooke lens. The results show that on forty-eight of the areas described by Herschel as nebulous there is no visible trace of diffused nebulosity, while on the remaining four there is nebulosity with very characteristic features. Photographs of these remarkable nebulous regions were thrown on the screen.—Prof. H. H. Turner read a paper on the suggestion made by Sir D. Gill that the brighter stars are, as a whole, rotating with respect to the fainter stars as a whole. A comparison of photographs taken at Oxford between 1892 and 1902 indicated a relative motion of the brighter stars of about the same amount as that found by Sir D. Gill, but in the opposite direction. Prof. Turner made the suggestion that the stars nearest to the sun may be, generally speaking, intrinsically fainter than those of the Milky Way, and there would thus for some regions be a discontinuity in the law by which fainter stars are, as a whole, more distant than brighter stars.—The secretary read a paper on the same subject communicated by the Astronomer Royal. A comparison has been made between Groombridge's catalogue (1810) and the Greenwich second ten-year catalogue (1890). The results, so far obtained, could not be taken as affording evidence of the cosmical movement suggested by Sir D. Gill.—Mr. E. T. Whittaker read a paper on the general solution of Laplace's equation and of the differential equation of wave-motions, and on an undulatory explanation of gravitation. The principal result was the general solution, by means of a definite integral, of the well-known partial differential equation which is satisfied by all Newtonian potential functions. It was then shown that a definite integral of a similar type furnished the general solution of the partial differential equation which occurs in the theories of light, sound and electromagnetic waves. From relations between the two solutions thus obtained, it was shown that any disturbance which can be represented by a solution of Laplace's equation can be compounded from simple uniform undulatory disturbances, and it was suggested that this analysis might furnish the explanation of the propagation of gravity.—Photographs of Perrine's Comet, taken at Greenwich, &c., were shown on the screen. On one of the Greenwich photographs,

no less than seven tails were shown, one of them a degree in length.—A paper by Dr. Max Wolf on stereoscopic pictures of Perrine's Comet was read, and the photographs exhibited.—The secretary read papers by Mr. Percival Lowell on an expedition to determine the best situation for an observatory and on a proposed standard scale of "seeing."—Mr. H. C. Plummer gave a short account of his second paper on the images formed by a parabolic mirror.—Other papers were taken as read.

Geological Society, November 5.—Prof. Charles Lapworth, F.R.S., president, in the chair.—The secretary read a communication, transmitted by the Rt. Hon. the Secretary of State for the Colonies, from Mr. H. Powell, Curator, Botanic Station, St. Vincent, to Dr. D. Morris, C.M.G., Imperial Commissioner of Agriculture for the West Indies, referring to the eruption of the Soufrière on September 3 and 4. At 3 p.m. on September 3, the corrected barometrical reading was 29.947, and the attached thermometer 85° F. Mr. Powell was informed that during the day a lot of matter was ejected over the western lip of the old crater down the Laricor or Roseau Valley to the sea. At 9.55 p.m., as seen at the Botanic Station, the eruption commenced in earnest; flashes of flame and lightning were visible over the Soufrière at intervals of twenty to thirty seconds, with frequent longer intervals. At 10.30 p.m., the corrected reading of the mercurial barometer was 30.105 and the attached thermometer 81.5° F. From about this hour, the discharges and accompanying noises increased in frequency and severity, and at 1.30 a.m. (September 4) the Soufrière was in full eruption. From this hour to 2 a.m., the eruption was more severe than on May 7, the explosions seeming to be louder and more continuous, and the electric discharges, owing, doubtless, to its being night, immeasurably grander and more awe-inspiring. At 2 a.m., the corrected barometrical reading was 30.045 and the temperature 81° F., and at 3 a.m. the corrected reading was 30.035. The marvellous electric display was checked by a heavy shower from the east, and the roar was correspondingly lessened. From about 1.30 a.m., a cloud black as gunpowder was seen advancing southward from the Soufrière, and at 2.30 this cloud had assumed a circular form and was overhead of the Botanic Station. The discharges from this cloud and to northward were exceedingly numerous and severe, and the appearance generally was as though myriads of long, fiery serpents were darting hither and thither, and a constant crackling noise was heard, in addition to the roar of the volcano. The chief disturbances seemed to be west of the Soufrière, in the direction of Martinique; and the writer is strongly of opinion, from observations at the time, that Mont Pelée and the Soufrière were in action together, but so far no news has come from Martinique. At 3 a.m. (September 4), the discharges and roar to the west nearly subsided, and the Soufrière alone seemed in action, but more on the windward side. From 3 to 4 a.m., the eruption gradually slackened, and at the latter hour had nearly ceased. The next morning, the barometer was normal at 29.950.—A second communication (also received through the Secretary of State for the Colonies) was read, dated Grenada, September 23, from Sir R. B. Llewellyn, Governor of the Windward Islands, expressing the hope that some scientific observers might be induced to go out to the West Indies and settle there for some time, in order to accumulate information as to volcanic and kindred phenomena.—The fossil flora of the Cumberland coalfield, and the palæobotanical evidence with regard to the age of the beds, by Mr. E. A. Newell Arber. The succession of Upper Carboniferous rocks in the region in question is apparently twofold—an arenaceous series, 600 feet thick, consisting of massive sandstones alternating with shales and fireclays, overlying argillaceous and carbonaceous deposits, the latter forming the productive portion of the coalfield and containing three great coal-seams, traceable throughout the district. The Upper or Sandstone series has yielded very few plant-remains from its upper division, but from the lower division a long list of plants is given. A consideration of the palæobotanical evidence has led to a reclassification of the rocks.—Some remarks upon Mr. E. A. Newell Arber's communication: on the Clarke collection of fossil plants from New South Wales, by Dr. F. Kurtz. Agreement was expressed with Mr. Arber's identification of *Rhipotozamites Goepfertii*, which was taken to be a synonym of *Noeggerathiopsis Hislopi*. *Podozamites elongatus*, however, was regarded as different from *Noeggerathiopsis Hislopi*. It was not considered that there is sufficient evidence to warrant the separation of *Otopteris ovata* from *Rhacopteris inaequilatera*, in which species it may be retained, perhaps as a variety. *Rh. inaequilatera*

has been found in the Argentine, and has been described by Geinitz as *Otopteris argentina*.—On a new boring at Caythorpe (Lincolnshire), by Mr. Henry Preston. This boring, after piercing Northampton Sands, passed through 199 feet of Upper Lias, 19 feet of Marlstone, and into the Middle Liassic Clays. With the aid of other shallow wells in the Lincolnshire Limestone, this rock is shown to have a decided dip to the west down the face of the escarpment, as though it had settled down upon the eroded surface of the Upper Liassic Clay. This settlement is probably the cause of a continuous spring flowing from the junction, and it has given rise to an underestimate of the thickness of the Upper Lias.

Linnean Society, November 6.—Prof. S. H. Vines, F.R.S., president, in the chair.—Mr. H. J. Elwes, F.R.S., gave a lecture, illustrated by a specially prepared map and lantern slides, entitled "Notes of a Natural History Journey in Chile," which he performed in the winter of 1901-02, spending five months on the trip. The lecturer confined his remarks to the country which has only recently become accessible, between Mulchen and Puerto Montt. From Buenos Ayres to Santiago is a three days' railway journey, broken by the Andine pass between Puente del Inca and Salto de Soldado, which has to be performed on mules. It was evident that the forests which cover the mountains and extend into the plain had never clothed the outer valleys, though a six hours' ride into the mountains will bring the traveller to abundant groves of the Chilean "cypress," *Libocedrus chilensis*. The most striking plant is *Puya coerulea*. The lecturer visited the beautiful gardens of the late Madame Cousino at Lota; on the hill-sides, large plantations of the Californian *Pinus insignis* are rapidly changing the aspect of the country. Nothing is more striking in the central valley of Chile transversed by the railway than the wonderful growth of introduced trees, which oust the natives. Lombardy poplars form avenues along the country roads; European oaks, thistles and introduced conifers give the aspect of Italy rather than of South America. This region may rival California as a fruit-producing country. The Agricultural College at Santiago is excellently found, its equipment surpassing anything in England. The lecturer visited the Baths of Chillan, at an elevation of about 6000 feet, where many plants and insects were collected; here the beech forests clothe the mountains, and here also a considerable quantity of the curious orchid *Chloraea* was obtained with some difficulty. The long fleshy roots were deeply buried in sand and stones amid the bushes and bamboo, *Chusquea andina*; those plants sent to Kew from Concepcion are growing fairly well. At Lolco, a farm on the Bio-bio river, may alpine plants were found. From Los Arcos past Lago Alumine to the Quillen river, few birds were noted, and mammals were very scarce. The extraordinary configuration of the rocks was mentioned. Early in February, the weather broke and several wet days ensued. San Martin is described as very beautifully situated, and will probably hereafter be much resorted to by visitors. The edge of the great Patagonian pampa was reached where the river Limay issues from the Nahuel-Huapi lake; from Puerto Blest to Puerto Montt, an easy track is now available, past the shores of Lago Frio, where *Fitzroya patagonica* was noted; from this lake, a magnificent view of Tronador volcano was obtained, the glaciers of which on the west side descend to about 2000 feet near Casapanque; avalanches were constantly falling from the mountain's precipices, with a noise which gave rise to its name. Here were beech trees, and a growth of *Gunnera chilensis* on the debris brought by the glacier, which was found to be of extreme interest. Lago Todos Santos is buried in forest.

MANCHESTER.

Literary and Philosophical Society, November 18.—Mr. Charles Bailey, president, in the chair.—A paper by Mr. Lionel Adams on a contribution to our knowledge of the mole (*Talpa europaea*) was communicated by Mr. W. E. Hoyle. The writer, who has been studying the mole for the last four years in the neighbourhood of Stafford, called attention to the singular neglect of this interesting species by naturalists since the time of Le Court (the well-known scientific mole catcher) and Geoffroy Saint-Hilaire at the beginning of the last century, the statements of these observers having been accepted by subsequent writers—with trifling exceptions—without any attempt at verification. The mole has been credited with making its "fortress" on a uniform plan, with exactly the same number of

galleries and runs communicating with the nest in precisely the same way, but the writer pointed out that, though he had dissected more than 300 fortresses, he had never found two alike or a single one corresponding to the time-honoured figure in the text-books. His observations showed that the tunnels in the interior of the fortress are not contrived as a means of escape from enemies, but are merely formed incidentally in the process of excavation and in piling up the superincumbent mound. There is, however, one exception to this, viz, the "boltrun," which is a tunnel leading out of the bottom of the nest. The conclusion was also arrived at that, though the mole is not actually blind, its power of vision is extremely limited and it finds its prey by scent alone. Instances were given of the mole eating the eggs of pheasants and partridges, after having undermined the nests, a fact which had hitherto escaped notice.—Mr. F. F. Laidlaw read a paper on some new species of marine planarians from Torres Strait and the Pacific.

PARIS.

Academy of Sciences, November 17.—M. Albert Gaudry in the chair.—On the impurities in compressed oxygen, and on their effect on combustions carried out in the calorimetric bomb, by M. Berthelot. Commercial compressed oxygen appears to be made in three ways, from barium peroxide, peroxide of manganese together with an alkaline hydrate and by the electrolysis of water. Samples of gas prepared in these three ways were examined for oxides of carbon, hydrogen and hydrocarbons, with the result that the amounts of these impurities were found to be too small to have any effect on the use of the gas for calorimetric determinations, and even when used for the estimation of carbon and hydrogen no error is introduced except in the case of the oxygen prepared electrolytically, when an appreciable amount of hydrogen may be present for which a correction is necessary.—On the recent publications of the Observatory of Paris: "Stellar Catalogue," part iv.; "Photographic Catalogue," vol. i.; *Annales*, Observations of 1898; *Memoires* (23); and *Bulletin* of the International Committee (3), by M. Loewy.—On the determination of the exact position of a mercury meniscus illuminated by a bundle of horizontal rays, by M. G. Lippmann. The difficulties of determining the exact position of a mercury surface are well known, and various devices have been suggested for overcoming them. The method suggested by the author is to illuminate the surface of the mercury by a bundle of horizontal light rays, formed by a collimator placed approximately in a line with the reading telescope. The outline of the mercury meniscus is then seen as a perfectly sharp line, and good observations can be made with a microscope furnished with a micrometer eyepiece. The extreme variation of a set of ten observations carried out in this way was 0.005 mm., with a mean error of about 0.0025 mm.—A simplification of Foucault's pendulum, by M. d'Arsonval. The form described was designed by M. Cannivel, and is noteworthy for its simplicity and cheapness.—The localisation of normal arsenic in some organs of animals and plants, by M. Armand Gautier. The author has applied the methods previously described by him to the examination of the feathers of birds, some marine and freshwater algae, coal, sea-water and rocks. The conclusion is drawn that arsenic appears to be as widely spread as nitrogen and phosphorus. It is invariably found, although in small proportion, in primitive rocks, soil, sea-water, plants, especially in algae, and in terrestrial and marine animals. In the latter, it is especially localised in those organs of ectodermic origin which are concerned with sensation and reproduction.—On the specific differences between the two diseases *Nagana* and *Mal de Caderas*, by MM. A. Laveran and F. Mesnil. These two diseases have many points of resemblance, but on close examination prove to be two specifically distinct diseases.—Effect of the excision of the madreporite in starfish, by M. V. Delage.—On the law of pressures in cannon, by M. E. Vallier.—On the analogy between the X-rays and the Hertzian oscillations, by M. P. Duhem.—On the recent sunset glows at Bordeaux, by M. E. Esclançon. The facts observed do not fit in with the hypothesis of cosmic dust either of terrestrial or extra-terrestrial origin. The effects produced can be better explained by the assumption of the production of finely divided ice particles in the upper regions of the atmosphere; the sudden disappearance of the phenomenon was found to correspond with a sudden rise of temperature.—On the approximate representation of functions, by M. W. Stekloff.—On the structure of finite groups, by M. E. Cartan.—On bipolar electrodes, by MM. Andre Brochet and C. L.

Barillet.—On the time constant characteristic of the disappearance of the radio-activity induced by radium in a closed space, by M. P. Curie.—On atmospheric hydrogen, by M. A. Leduc. Confirmation of the view recently expressed by Lord Rayleigh that the actual amount of hydrogen free in the atmosphere is only about one-sixth to one-eighth that given by M. Gautier.—On the oxalomolybdates, by M. Bailhache.—Some remarks on musculamine, a base derived from muscles, by M. S. Posternak. The base recently described by MM. Etard and Vila, and which they isolated from the products of hydrolysis of the muscle of veal, appears from its properties and analysis to be identical with cadaverine, pentamethylenediamine, and hence is not a triamine as supposed by MM. Etard and Vila. It would, however appear to be the first example of the direct formation of cadaverine by the hydrolysis of an albuminoid by means of acids.—On the variation in the reserve hydrocarbons in the stem and root of ligneous plants, by M. Leclerc du Sablon.—*Landolphia Pierrei* considered as a source of caoutchouc, by M. Henri Hua.—The influence of organic materials on the development and anatomical structure of some phanerogams, by M. Jules Laurent. The author has shown in previous publications that certain organic materials, such as glucose, saccharose and inert sugar, form excellent food substances for green plants. These results are now extended to glycerol and humic acid.—The analogy between the Carpathians and the Alps, by M. Maurice Lugeon.—The electrolysis of metallic salts in the tissues, by M. André Poëy.—An apparatus for determining the duration of luminous impressions on the retina, by M. Maurice Dupont. The apparatus described has been applied to the determination of the duration of the persistence of images on the retina, under normal conditions and in pathological cases.—The production of sleep and of general anaesthesia by electric currents, by M. S. Leduc. The production of sleep and of general anaesthesia in animals by means of electric currents has been described in a previous paper, but the method gave rise to some pain at the commencement; by introducing into the circuit a rheostat without self-induction, and taking from three to five minutes to attain the full intensity of the current, these inconveniences can be removed.—The reproduction of an unlimited number of phonograms in wax for phonographic museums, by M. L. Azoulay.—The production of fixed colours on all kinds of leather by the use of salts of molybdenum combined with tanning materials, by M. Emm. Pozzi-Escot.

DIARY OF SOCIETIES.

THURSDAY, NOVEMBER 27.

ROYAL SOCIETY, at 4.30.—Experiments on the Effect of Mineral Starvation on the Parasitism of the Uredine Fungus *Puccinia dispersa* on Species of Bromus: Prof. H. M. Ward, F.R.S.—Note upon Descending Intrinsic Spinal Tracts in the Mammalian Cord: Prof. C. S. Sherrington, F.R.S., and Dr. E. E. Laslett.—The Inter-relationship of Variola and Vaccinia: Dr. S. Monckton Copeman.—The Colour-Physiology of Higher Crustacea: F. Keeble and Dr. F. W. Gamble.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—On Electrons: Sir Oliver Lodge, F.R.S.

FRIDAY, NOVEMBER 28.

PHYSICAL SOCIETY, at 5.—A Slide-Rule for Powers of Numbers: Prof. J. Perry, F.R.S.—A Lecture Experiment to determine the Value of the Mechanical Equivalent of Heat: Prof. Callendar, F.R.S.—A Portable Capillary Electrometer: S. W. J. Smith.

MONDAY, DECEMBER 1.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—The Influence of Impurities on the Specific Gravity of Sulphuric Acid: Arthur Marshall.—The Interaction of Sulphurous and Nitrous Acids as affecting various Absorbents employed in Testing the Gases escaping from Vitriol Chambers: R. Forbes Carpenter and J. E. Linder.—Note on the Determination of the Strength of Sulphuric Acid: Arthur Marshall.

VICTORIA INSTITUTE, at 4.30.—The Babylonian Story of the Creation: Dr. T. G. Pinches.

SOCIETY OF ARTS, at 8.—The Future of Coal Gas and Allied Illuminants: Prof. Vivian B. Lewes.

TUESDAY, DECEMBER 2.

INSTITUTION OF CIVIL ENGINEERS, at 8.—High-Speed Electrical Generating Plant: T. H. Minshall.

ZOOLOGICAL SOCIETY, at 8.30.—Features of Animal Life in Southern Mexico: Dr. Hans Gadow, F.R.S.—On the Variation of the Elk: Dr. Einar Lönnberg.—On the Crustacea collected during the "Skeat Expedition" to the Malay Peninsula. Part II.: W. F. Lanchester.

WEDNESDAY, DECEMBER 3.

SOCIETY OF ARTS, at 8.—Some Aspects of Photographic Development: Alfred Watkins.

ENTOMOLOGICAL SOCIETY, at 8.

SOCIETY OF PUBLIC ANALYSTS, at 8.

GEOLOGICAL SOCIETY, at 8.—On some Suffolk Well-Sections: W. Whitaker, F.R.S.—The Cellular Magnesian Limestone of Durham: George Abbott.

THURSDAY, DECEMBER 4.

ROYAL SOCIETY, at 4.30.—*Probable papers*:—(1) On the "Blaze-Currents" of the Incubated Hen's Egg; On the "Blaze-Currents" of the Crystalline Lens: Dr. A. D. Waller, F.R.S.—A Contribution to the Question of "Blaze-Currents": Dr. A. Durig.—On the Similarity of the Short Period Variation over Large Areas: Sir Norman Lockyer, F.R.S., and Dr. W. J. S. Lockyer.—Isomeric Change in Benzene Derivatives. The Interchange of Halogen and Hydroxyl in Benzenediazonium Hydroxides: Dr. K. Orton.—On the Vibrations and Stability of a Gravitating Planet: J. H. Jeans.

LINNEAN SOCIETY, at 8.—New and rare Corals from Funafuti: G. C. Bourne.—On the Morphology of the Flowers and Fruits of the Xylosteum Section of *Lonicera*: E. A. Newell Arber.—Note on *Carex Tolmiei*, Boott: B. Clarke, F.R.S.—New and old Phalangidæ from the Indian Peninsula: C. With.

RÖNTGEN SOCIETY, at 8.30.—An Observation bearing upon the Therapeutic Action of the Focus Tube: Dr. D. Walsh.—X-Rays in Ophthalmic Work: Stephen Mayou.—Mr. Isenthal will show the Nodon Electric Valve for converting Alternating into Continuous Current.

CHEMICAL SOCIETY, at 8.—The Absorption Spectra of Metallic Nitrates. Part II.: W. N. Hartley.—The Specific Heats of Liquids: H. Crompton.—(1) Studies in the Camphane Series. Part X. The Constitution of Enolic Benzoylcamphor; (2) Note on the Isomeric Benzoyl Derivatives from Isonitrosocamphor: M. O. Forster.—The Constitution of the Products of Nitration of Meta-acetylulidide: J. B. Cohen and H. D. Dakin.

AERONAUTICAL SOCIETY, at 8.—Presidential Address. Recent Aeronautical Progress: Major B. F. S. Baden-Powell.—The Contributions of Balloon Investigations to Meteorology: Dr. W. N. Shaw, F.R.S.—The Kite Equipment of the Scottish National Antarctic Expedition: John Anderson.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Extra Meeting for the Inaugural Address by the President, Mr. J. Swinburne.

FRIDAY, DECEMBER 5.

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